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shedding new light on this most important topic. The editor of the *Revue*, M. Ch. Richet, the well-known physiologist and psychologist, requests that all who have facts to present will send them to him. His address is 111 Boulevard Saint-Germain, Paris, France.

—Harper & Brothers have just ready "The Correspondence of John Lothrop Motley," edited by George William Curtis. Mr. Motley's daughters have collected these letters, chiefly addressed to the writer's family and to Oliver Wendell Holmes. They contain the autobiography of one of the most striking figures in American literary history. The author of "The Rise of the Dutch Republic," "History of the United Netherlands," and "The Life and Death of John of Barneveld," studied the history of liberty in an essentially American spirit. Wendell Phillips was his school chum, Bismarck his fellow-student at Göttingen; and as United States minister to London, Holland, and Austria, he made personal friends of all the literary and political celebrities of his day. Few lives have been so full of incident of universal interest. The work is in two volumes, and has a portrait.

—The Leonard Scott Publication Company (New York, 29 Park Row) has reprinted the famous Bismarck Dynasty article from the *Contemporary Review* for February (price 15 cents), a large special edition of that number having been exhausted on the day of publication. The authorship of the article continues to be the theme of much speculation in England. The Empress Frederick has thought it necessary to disclaim it, and so has Sir Morell Mackenzie. Many of those who claim to know, attribute it to Mr. Stead, the editor of the *Pall Mall Gazette*. Mr. Labouchere says he almost knows it was Mr. Stead, and sundry characteristics can be pointed out which lend color to this view. In the mean time eight editions of the *Review* have been called for in England.

—A novel feature in magazine literature was introduced in the *Nineteenth Century* for February. The editor has invited a number of his friends to send him from time to time, in the shape of letters to himself, remarks upon any books which in the ordinary and natural course of their reading may strike them as being worth special attention. He has suggested to them, that, whenever a book is thus met with, a letter about it should be written to him, giving the same advice as to a friend, and in much the same sort of easy fashion. He hopes in this way to obtain fresher and more spontaneous criticism than can possibly be always produced under the prevailing system of "noticing" books "sent for review." The first instalment of this series consists of a notice of Margaret Lee's novel "Divorce," by Mr. Gladstone; of the "Lyrics," and "A Village Tragedy" by Margaret Woods, by Frederick Harrison; Dean Burgon's "Lives of Twelve Good Men," by P. E. Prothero; Sir George Young's "Sophocles," in English, by W. S. Lilly; "Notes of Conversations with the Duke of Wellington," by Augustine Birrell; Miss Rives's "The Quick or the Dead?" and "Virginia of Virginia," by Hamilton Aide; M. Jusserand's "Wayfaring Life," by the Rev. Dr. Jessopp; and George Pellew's "In Castle and Cabin," by John Morley.

—The New England Publishing Company have just published "One Hundred Lessons in Composition," by W. H. Huston of Toronto, which contains 400 practical exercises in composition, and is the sixth volume in their library of Teachers' Help Manuals. It will shortly be followed by "Manual of Rhymes, Selections, and Phrases," by Oscar Fay Adams; "Forty Friday Afternoons," by forty prominent masters, each giving what he considered his best exercises for a Friday afternoon; and "Common-Sense Exercises in Geography," a book of exercises — not questions — adapted to all grades and to the best American text-books. They have also just ready "School Music," by W. S. Tilden, of the State Normal School, Framingham, Mass., a series of papers from the *American Teacher*.

—The *Critic* observed the seventieth anniversary of the birth of Mr. Lowell, which occurred on Feb. 22, by printing seventy letters and poems from American and English men and women of letters, among whom are Tennyson, Whittier, Gladstone, Holmes, and Stedman.

—Mrs. Frank Leslie has sold to W. J. Arkell, of *Judge*, her *Frank Leslie's Illustrated Newspaper*, both English and German,

the transfers to be made May 1. Mrs. Leslie will retain and personally direct her other publications.

—Emin Pacha forms the subject of a paper by Elbridge S. Brooks in the February *Wide Awake*.

## LETTERS TO THE EDITOR.

\**Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith. The editor will be glad to publish any queries consonant with the character of the journal.*

### The Soaring of Birds

MAY I ask space for a few comments on Professor W. H. Pickering's letter on the above subject, in *Science* of Feb. 22?

Professor Pickering holds that a bird which is moving with motionless wings in a horizontal wind is acted upon by three forces: (1) its weight; (2) a force "due to the excess of the velocity of the wind over the velocity of the bird," by which, since it is represented as horizontal and to leeward in his diagram, I suppose he means the friction between bird and wind; and (3) a force "due to the resistance of the air acting on the wings of the bird," which I take to mean the force derived from the impact of the air particles on the wings. This third force he assumes to have a direction opposite to that of the resultant of forces (1) and (2), and therefore to have one component vertically upward, and another to windward. This assumption seems to me to be erroneous. The horizontal component of such a force must surely be to leeward, as was pointed out by Hubert Airy in *Nature*, xxvii. p. 336; and the inaccuracy of this fundamental assumption of Professor Pickering would seem to invalidate his whole argument.

But let us follow it further. Force (3), he says, depends on the velocities of bird and wind, and he assumes first that these velocities are such that it is equal to the resultant of forces (1) and (2). In that case he says the forces acting on the bird will be in equilibrium. They would be, certainly, if the above assumption were true. "The bird," he then says, "will therefore continue to revolve about its mean position." How can a body which is in equilibrium revolve about a mean position? It must surely move with a uniform velocity in a straight line. He says again, "While these forces are in equilibrium, the bird is slowly drifting in the same direction as the wind." Why so? If the bird is in equilibrium, he must have the same velocity as he had at the instant at which he came to be in equilibrium, and that may or may not have had the same direction as the wind. In fact, if it is true, as Professor Pickering assumes, that the forces acting on the bird can be in equilibrium, the bird can move to any distance, in any direction whatever, with motionless wings. He has but to get up a velocity in the desired direction by using his wings, and then to poise his wings so that the forces acting on him may be in equilibrium. Since this result is contrary to experience, it makes the possibility of the bird's being in equilibrium under the given conditions doubtful; and it is obvious, that if force (3) has a leeward component, as I hold it must, its being equal to the resultant of (1) and (2) does not involve the vanishing of the resultant of all three; indeed, that whatever assumption may be made as to the magnitude of (3), the resultant of (1), (2), and (3) cannot possibly be zero.

Finally, Professor Pickering assumes the velocities of wind and bird to be such as to make force (3) greater than the resultant of (1) and (2). In that case, if the assumption criticised above were correct, the bird would be acted upon by a resultant force directed upwards and to windward, as Professor Pickering states. But if force (3) is directed upwards and to leeward, it will be obvious that the resultant force on the bird will be necessarily directed to leeward, and will not necessarily be directed upwards; and it follows, that, even if the velocities of wind and bird be assumed to be such that force (3) is greater than the resultant of (1) and (2), the bird's path will not necessarily have a general upward direction.

J. G. MACGREGOR.

Dalhousie College, Halifax, N.S., Feb. 27.

### A New Departure in Effigy Mounds.

IT was first asserted by Dr. J. M. De Hart that there are to be found exceptions to the ordinary rule followed by the mound-builders in the outlines of their quadruped animals; i.e., that in-